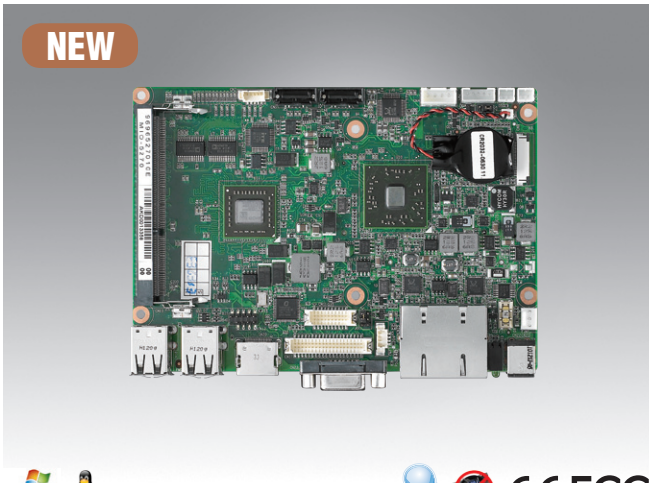
MIO-5270

AMD® G- Series MI/O Extension SBC, DDR3, HDMI, 48-bit LVDS, VGA, 2 GbE, CFast, iManager, MIOe



Windows Embedded

iManager

CE FCC

Features

- Embedded AMD® G- Series Single Core/ Dual Core processor + AMD A50M FCH, 1 x DDR3 memory support upto 4 GB
- DirectX® 11, 2D/3D Acceleration, multiple display: 48-bit LVDS, HDMI, VGA
- Flexibile design by using integrated multiple I/O:MIOe to approach vertical applications & keep domain knowhow.
- 2 GbE support, HD Audio, Rich I/O interface with 4 COM, 2 SATA, 6 USB and GPIO
- Supports iManager, embedded software APIs and Utilities

Software APIs: GPIO, H/W Monitor, Brightness, Watchdog, Backlight On/Off, SMBus, CPU Speed, System Throttling

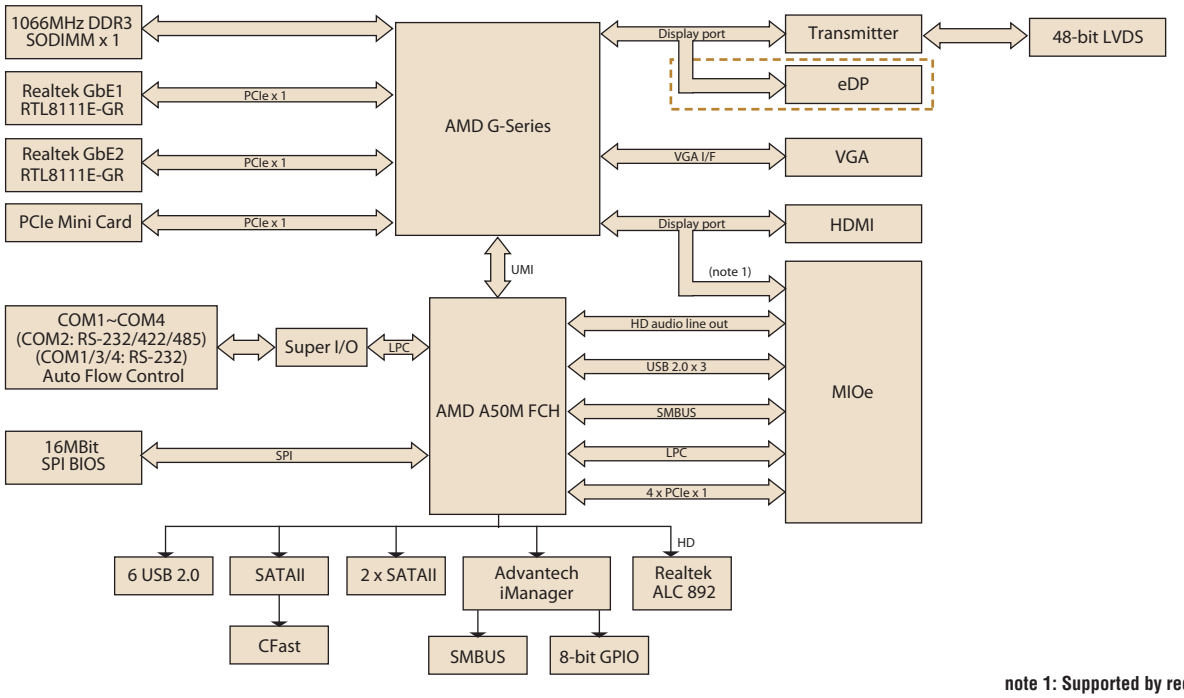
Utilities: Monitoring, eSOS, Embedded Security ID

Specifications

Processor System	CPU	AMD G- Series, T40R 1.0GHz single core, T40E 1.0GHz dual core, T56N 1.65GHz dual core
	Frequency	1.0GHz single/dual core, 1.65GHz dual core
	L2 Cache	512 KB on T40R/ T40E, 1 MB on T56N
	System Chipset	AMD G-Series + A50M FCH
	BIOS	AMI EFI 16Mbit
Memory	Technology	DDR3 1066 MHz, 1333MHz only on T56N
	Max. Capacity	4 GB
	Socket	1 x 204-pin SODIMM
Display	Chipset	AMD G- Series
	Graphic Engine	DirectX® 11 graphics with UVD 3.0 2D Acceleration, 3D Acceleration, Motion Video Acceleration, Supports DVD, Blu-ray* Hardware decode (UVD 3):H.264, VC-1 & MPEG2
	LVDS	LVDS: Supports single channel 24-bit or dual channel 48-bit LVDS T56N up to 2560 x 1600 @ 60 Hz, T40R, T40E, up 1920 x 1200 @ 60 Hz (pixel clock rate = 80 MHz)
	VGA	T56N up to 2560 x 1600, T40R, T40E, up 1920 x 1200
	HDMI	Supports 1920 x 1080p at 60 Hz, 36 bpp, Supports HDMI v1.3, using TMDS data encoding
	eDP	Option (Support by request) T56N up to 2560 x 1600, T40R, T40E up 1920 x 1200
	Dual Display	Yes (VGA+LVDS or VGA + HDMI or HDMI + LVDS)
Ethernet	Speed	10/100/1000Mbps
	Controller	GbE1 Realtek RTL8111E-VB-GR 10/100/1000Mbps, GbE2 Realtek RTL8111E-VB-GR 10/100/1000Mbps
	Connector	2 RJ45 on Rear I/O
Audio	Chipset	Realtek ALC892, High Definition Audio (HD),Line-in, Line out, Mic-in
	Amplifier	Can be supported via MIOe
WatchDog Timer		255 levels timer interval, programmable by software
Storage	CFast	1
	SATA	2 x SATA II (Max. Data Transfer Rate 300 MB/s)
Rear I/O	Ethernet	2 (10/100/1000Mbps)
	VGA	1
	HDMI	1
	USB	4 x USB 2.0
	LED	Power, Hard disk
	DC Power	1 (Supported only on MIO-5270S-S0A1E & MIO-5270D-S0A1E)
Internal I/O	USB	2 x USB 2.0
	Seriel	3 RS-232 from COM1/3/4, 1 RS-232/422/485 from COM2 (ESD protection for RS-232: Air gap ±15kV, Contact ±8kV)
	SMBUS	Supported
	GPIO	8-bit general purpose input/output
Expansion	PCIe Mini Card	1 (full size)
	MIOe	1
Power	Power Type	Single 12V DC power input
	Power Supply Voltage	Supports single 12V input, ± 10%
	Power Consumption (Typical)	T40R: 0.59 A @ 12 V, T40E: 0.53 A @ 12 V, T56N: 0.65 A @ 12 V
	Power Consumption (Max, test in HCT)	T40R: 0.8 A @ 12 V, T40E: 0.82 A @ 12 V, T56N: 1.35 A @ 12 V
	Power Management	ACPI
	Battery	3 V / 210 mAH
Environment	Operational	0 ~ 60° C (32 ~ 140° F) (Operational humidity: 40° C @ 95% RH Non-Condensing)
	Non-Operational	-40° C ~ 85° C and 60° C @ 95% RH Non-Condensing
Physical Characteristics	Dimensions (L x W)	146 x 102 mm (5.7" x 4")
	Weight	0.85 kg (1.87 lb), weight of total package

All product specifications are subject to change without notice

Board Diagram



note 1: Supported by request

Ordering Information

Part No.	CPU	L2 Cache	LVDS	VGA	HDMI	GbE1	GbE2	Audio	RS-232/ 422/485	RS-232	USB 2.0	GPIO	SATAII	CFast	miniPCIe	MIOe	Power Connector	Thermal Solution	Operational Temp.
MIO-5270S-S0A1E	AMD T40R 1.0G SC	512 KB L2	48-bit	Yes	Yes	1	1	Yes	1	3	6	8-bit	2	1	1	Yes	DC Jack	Passive	0 ~ 60° C
MIO-5270D-S0A1E	AMD T40E 1.0G DC	512 KB L2	48-bit	Yes	Yes	1	1	Yes	1	3	6	8-bit	2	1	1	Yes	DC Jack	Passive	0 ~ 60° C
MIO-5270D-S6A1E	AMD T56N 1.65G DC	1 MB L2	48-bit	Yes	Yes	1	1	Yes	1	3	6	8-bit	2	1	1	Yes	2x2 type	Active	0 ~ 60° C

Packing List

Part No.	Description	Quantity
	MIO-5270 SBC	
	Startup Manual	
	Utility CD	
1700006291	SATA1 cable 7P/ 7P 30cm C=R 180/90	1
1700018785	SATA Power Cable 35cm	1
1700019435	COM1 RS-485 D-SUB 9P (M)/1*4P 2.0 25cm cable	1
1701200220	COM RS232 Cable 2*10P-2.0/D-SUB 9P (M)*2 22CM	2
1700019584	Audio Cable 2*5P-2.0/ JACK*3 20cm	1
9689000002	mini Jumper pack	
1960053507N001	Heatsink (137 x 84 x 25 mm) for T40R/ T40E series	
1960053508N001	Cooler (137 x 84 x 25 mm) for T56N series	

Optional Accessories

Part No.	Description
1960054266T001	Heat spreader for MIO-5270 (137 x 84.2 x 16.7mm)
1700006291	SATA2 cable 7P/ 7P 30cm C=R 180/90
	USB5/6 cable

Embedded OS/API

Embedded OS/API	Description
2070010844	XPE WES2009 MIO-5270 V4.0 24MUI
2070010845	WES7E SP1 MIO-5270 V5.1 ENG
Linux	Ubuntu 10.04
Software API	SUSI V3.0

Rear I/O View

MIO-5270S-S0A1E
MIO-5270D-S0A1E

MIO-5270D-S6A1E

Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

Software APIs

Control

GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

SMBus

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.

I²C

I²C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I²C API allows a developer to interface with an embedded system environment and transfer serial messages using the I²C protocols, allowing multiple simultaneous device control.

Monitor

Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.

Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

Hardware Control

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Display

Brightness Control

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.

Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

Power Saving

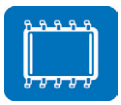
CPU Speed

Make use of Intel SpeedStep technology to reduce power power consumption. The system will automatically adjust the CPU Speed depending on system loading.

System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

Software Utilities



BIOS Flash

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.

Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.

Monitoring

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.

eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.

Flash Lock

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.

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